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Khuzestan: Water Diversion as a Tactic in the Iran-Iraq Conflict

A Research Paper

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A Research Paper

Information available as of 20 March 1981 has been used in the preparation of this report.

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Khuzestan: Water Diversion as a Tactic in the Iran-Iraq Conflict

Since last November, the Iranians have used intentional flooding in their defense of the approaches to Ahvaz—the capital of Khuzestan Province and the terminus to the Trans-Iranian pipeline. This tactic has helped contain the Iraqi forces, which by mid-October had advanced to within 10 to 20 kilometers of Ahvaz, well within artillery range of the city.[1]

Water has been diverted from several rivers,[2] with the aid of existing irrigation systems, to flood low-lying areas occupied by the Iraqi forces (photo mosaic). This flooding has required the Iraqis to abandon some positions, reduced the area available for maneuver, and forced them to construct an extensive system of dikes to hold back the water. Damage to Iranian property and agriculture in the area has been on a small scale and should be fairly easily rectified once the military action ceases.

Local rains and snow melt in the mountains could permit use of the Iranian water tactic through June unless the Iraqis successfully implement a plan to destroy key dams north and east of Ahvaz. We doubt that this is within Iraqi capabilities; but should they succeed in destroying the dams, Iranian ability to use water diversion as a defensive measure would be greatly reduced and Khuzestan would be faced with serious economic problems in the long term.

Chronology of Water Diversion Activity

The Iranians introduced water diversion as a defensive tactic in the Iran-Iraq conflict sometime between 29 October and 20 November. To impede the Iraqi advance toward Ahvaz, the Iranians built a low earthen dam/causeway across the Karkheh Kur south of Hamidiyeh and west of Ahvaz and cut irrigation dikes to direct the impounded water into the area east of the dam (photo A). Additional water to augment the flooding was diverted from the Karkheh River dam (north of Hamidiyeh) through an irrigation canal to the Karkheh Kur. By 3 December, as the water outflanked protective dikes built by the Iraqis, the flooded area had greatly expanded, displacing elements of two Iraqi armor brigades. On 26 December, the area of standing water and saturated soils had increased to about 30 kilometers north-south and 7 kilometers east-west.

The next phase of the Iranian water defense began with the digging of a large ditch around the western outskirts of Ahvaz sometime between 20 November and 26 December. The approximately 140-meter-wide ditch extends about 17 kilometers from an intake on the Karun River to a point near the Ahvaz-Khorramshahr road. To increase the amount of water in the Karun, the Iranians, on 29 January, reportedly opened the gates of the large dam on the Dez River (above Dezful). On 4 February, the level of the Karun was above the intake point of the ditch, sending water around Ahvaz to flood new areas near those that had been inundated by waters from the Karkheh in November. The two flooded areas had merged by 14 March, and Karun water was flowing into the area that was flooded in November. At the same time, this flooding had expanded to the east and west of the Ahvaz-Khorramshahr road and reached almost to the Karun River south of Ahvaz.

The Iranians, by early February, had also created a large area of flooding between the Karkheh and Karkheh Kur Rivers adjacent to the area flooded in November. The water released from the Dez dam in January may have contributed to this flooding, for we believe that the Iranians could have used manmade drainage and irrigation canals between the Dez and Karkheh Rivers to transfer water westward into the Karkheh River. The most direct cause of this additional flooding, however, was a second earthen dam constructed by the Iranians across the Karkheh Kur about 9 kilometers southwest of the dam built in November. (The November dam has now been cut so that water can flow south in the stream channel to the new dam as well as into the still-flooded area to the east.) The flooding between the Karkheh and Karkheh Kur Rivers compelled a small part of the Iraqi forces to move westward, reduced the area available for their maneuver, and forced them to construct dikes to hold back the westward-spreading water. The dikes also protect a bridge across the Karkheh Kur and part of an Iraqi supply road between the rivers. The Iraqis have opened three drainage ditches near the bridge to channel the floodwater back into the Karkheh Kur.

Other major flooding operations have been carried out farther to the northwest, nearer Susangerd. An earthen dam that was started by the Iranians in February on the Karkheh at Jalizi has caused the river to overflow its banks and flood a large area between the Karkheh and Karkheh Kur. Additional water has been diverted into this area from a stream southeast of Susangerd via a new ditch and an existing intermittent lake. North of the Karkheh, the Iranians caused widespread flooding in February by diverting water from the dam north of Hamidiyeh into an irrigation canal paralleling the Karkheh. Dikes along the canal were cut, inundating the area between the canal and the river.

Stream levels normally remain high enough to permit deliberate flooding through June. Moreover, natural flooding from heavy rains coupled with spring snow melt in the Zagros mountains is a possibility through May in some places.

Impact of Water Diversion

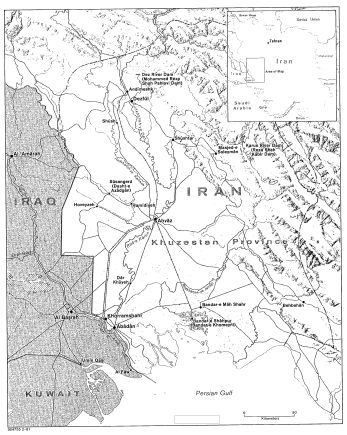
Iranian use of water diversion seems to have been an effective tactic in the defense of Ahvaz. Although relatively few Iraqi forces have been displaced, the continued expansion of the flooded areas has made the western approaches to Ahvaz largely impassable to armored vehicles. The effectiveness of the water diversion is evidenced by reported Iraqi interest in targeting for destruction the large concrete dams on the Dez and the Karun as well as the smaller one on the Karkheh north of Hamidiyeh (ground photo). Such a move would cause widespread flooding along the Dez and Karun Rivers, probably having little effect on current Iraqi military operations but major economic effects on Khuzestan Province.

So far, the Iranian water diversion activity has been carried out without serious, long-term consequences to Iran itself. Water damage to Iranian towns, roads, irrigation works, and agriculture has been on a small scale. Some villages have been flooded, or isolated and abandoned, and several loose-surfaced roads have been inundated. For the most part, the mud-brick structures in the affected villages and the rural roads can be replaced or repaired with local materials once the fighting stops. A number of embanked roads, including the one from Ahvaz to Khorramshahr, have been purposely cut by the Iranians to expand the flooded area or by the Iraqis to divert water away from their positions. However, the embanked hard-surfaced roads between Ahvaz and Hamidiyeh and Susangerd have not been cut and are still usable. The irrigation works in this area, except for those in the immediate vicinity of the Karkheh, consist of rudimentary earthen dikes and canals that can be easily repaired. Fighting had already sharply reduced or stopped agricultural production in the area, and any additional losses or curtailment of activity from flooding should be comparatively small.

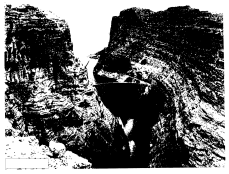
We doubt that the Iraqis could destroy the Iranian dams; but should they succeed, the damage to Iran would be serious and long term. The Iranians would lose their capability to raise stream levels as a military tactic. Moreover, a sudden release of the water in the large reservoirs would cause severe flooding in the Dezful and Ahvaz areas and drastically reduce electric power production in southwestern Iran. Such widespread and indiscriminate flooding would also cripple agricultural production in the areas of modern irrigation between the two cities (reportedly producers of one-half of Iran's total sugar harvest). Damage to lines of communication and to agriculture along the Karun probably would extend as far downstream as Khorramshahr and Abadan.

[1] The maximum ranges of Iraqi artillery are as follows: 122-mm howitzer—11 kilometers; 130-mm gun—27 kilometers; and 180-mm howitzer—27 kilometers (30 kilometers with rocket-assisted ammunition). The Iraqi FROG-7 and SCUD have ranges of 65 to 75 kilometers and 300 kilometers, respectively.

[2] The Khuzestan rivers involved are the Karun (Rud-e Karun), Karkheh (Rud-e Karkheh, Karkheh Kur (Rud-e Karkheh Kur), and Ha Dez (Rud-e Dez).



Dez River Dam



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